MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 2, 2015/2016

TSE 2231– SOFTWARE ENGINEERING FUNDAMENTALS
(All sections / Groups)

29 FEBRUARY 2016
9.00am – 11.00am
(2 Hours)

INSTRUCTIONS TO STUDENT

1. This Question paper consists of 5 pages including cover page with 2 Sections.

2. Answer all questions in **SECTION A.**

3. Answer **FOUR** out of **FIVE** questions in **SECTION B.** All questions carry equal marks and the distribution of the marks for each question is given.

4. Please write all your answers in the Answer Booklet provided.

SECTION A: MULTIPLE CHOICE QUESTIONS
(Answer all the 20 questions in this section, 1 mark for each question)

1. The essence of software engineering practice might be described as "understand the problem, plan a solution, carry out the plan, and examine the result for accuracy".
    A   True   B   False

2. While there are many models for the software development lifecycle, the staged delivery model is clearly the best.
    A. True   B. False

3. There are no real differences between creating WebApps and MobileApps.
    A. True   B. False

4. The communication activity is best handled for small projects using six distinct actions (inception, elicitation, elaboration, negotiation, specification, validation).
    A. True   B. False

5. Interface design focuses on how information is provided to and captured from users.
    A. True   B. False

6. Recovery testing is a system test that forces the software to fail in a variety of ways and verifies that software is able to continue execution without interruption.
    A. True   B. False

7. The number of modules in a system is one way to measure complexity of that system.
    A. True   B. False

8. Requirements engineering is a generic process that does not vary from one software project to another.
    A. True   B. False

9. The elements of software quality assurance consist of reviews, audits, and testing.
    A. True   B. False

10. With thorough testing it is possible to remove all defects from a program prior to delivery to the customer.
    A. True   B. False

11. Which of the following statements about software is true?
    A. Software becomes more and faultier over time.
    B. Software is physical and easy to visualize.
    C. Software has low manufacturing cost.
    D. Software has no manufacturing cost.

Continued ......

12. Which of the following statements is true about the spiral software development model?
    A. At least some specification is written before any code.
    B. Most specification is written before any code.
    C. At least some implementation must take place before any tests are written.
    D. Most tests are written before implementation takes place.

13. Software deteriorates rather than wears out because
    A. Software suffers from exposure to hostile environments.
    B. Multiple change requests introduce errors in component interactions.
    C. Defects are more likely to arise after software has been used often.
    D. Software spare parts become harder to order.

14. Which is not one of the key questions that is answered by each team member at each daily Scrum meeting?
    A. What did you do since the last meeting?
    B. What obstacles are you encountering?
    C. What is the cause of the problem you are encountering?
    D. What do you plan to accomplish be the next team meeting?

15. Requirements models depict software in which three domains?
    A. architecture, interface, component
    B. information, function, behavior
    C. cost, risk, schedule
    D. None of the above.

16. Which of the following is not one of the context-free questions that would be used during project inception?
    A. What will be the economic benefit from a good solution?
    B. Who will use the solution?
    C. Who is behind the request for work?
    D. Who will pay for the work?

17. What is the normal order of activities in which traditional software testing is organized?
    A. integration testing, system testing, unit testing, validation testing.
    B. validation testing, system testing, integration testing, unit testing
    C. unit testing, validation testing, system testing, integration testing
    D. unit testing, integration testing, validation testing, system testing

18. Software safety is a quality assurance activity that focuses on hazards that
    A. may cause an entire system to fail.
    B. affect the reliability of a software component.
    C. may result from user input errors.
    D. prevent profitable marketing of the final product.

19. Which of the following is not considered one of the four important elements that should exist when a configuration management system is developed?
    A. component elements
    B. validation elements
    C. human elements
    D. process elements

20. Which factors should not be considered in choosing the organizational structure for a software team?
    A. degree of communication desired
    B. size of the project budget
    C. predicted size of the resulting program
    D. rigidity of the delivery date

SECTION B (40 marks)
(Answer FOUR out of FIVE questions in this section)

QUESTION 1

a) What makes software engineering different from problem solving in other engineering fields and sciences?   Describe **THREE (3)** differences.

(3 marks)

b) List **THREE (3)** key issues stressed by an agile philosophy of software engineering.

(3 marks)

c) Why are evolutionary models considered by many to be the best approaches to software development in a modern context? Discuss **TWO (2)** reasons.

(4 marks)

QUESTION 2

a) Describe **THREE (3)** root causes of project failure.

(3 marks)

b) Construct a Gantt chart using the data in Table 1, assuming that the project will start May 2.

Table 1

Task	Duration	Predecessor/s
A	6	--
B	9	A
C	5	A
D	11	A
E	8	B
F	6	C, D, E

(4 marks)

c) What is wrong with the requirement? "The user interface must be easy to use"? Rewrite and improve this requirement.

(3 marks)

Continued ....

QUESTION 3

a) What is the relationship between requirement analysis design and design modeling? Explain in detail.   (2 marks)

b) Describe the principle of information hiding as it applies to software design.   (3 marks)

c) For the following situation, draw a context-level diagram:
ABC Bank provides car and home loans to its banking customers. Initially, a potential loan customer meets with an ABC loan officer, requests a loan for a certain amount and time frame, and completes a loan application. Next, the loan officer determines the customer's credit standing, the type of loan required, and available interest rates. While the loan officer can authorize car loans for credit worthy customers, a loan committee must approve all home loans.   (5 marks)

QUESTION 4

a) Discuss software verification and its role in ensuring the correctness of a software implementation.   (3 marks)

b) Discuss **TWO (2)** design characteristics that can serve as a guide to evaluate design quality.   (4 marks)

c) Every student at TS College will be advised by one teacher. Some teachers advise many students, and some advises none. Draw a class diagram to represent the student-teacher relationship.   (3 marks)

QUESTION 5

a) Describe **TWO (2)** purposes to conduct acceptance test plan for any new software product or system.   (1 marks)

b) Draw a use case diagram for a ticket distributor for a train system. The system includes two actors: a traveler, who purchases different types of tickets; and a central computer system, which maintains a reference database for the tariff. Use cases should include: BuyOneWayTicket, BuyWeeklyCard, BuyMonthlyCard and UpdateTariff. Also include the following exceptional cases: Time-Out (i.e., traveler took too long to insert the right amount), TransactionAborted (i.e., traveler selected the cancel button without completing the transaction), DistributorOutOfChange, and DistributorOutOfPaper.   (5 marks)

c) What are the **FOUR (4)** elements that exist when a Software Configuration Management (SCM) system is implemented? Discuss each briefly.   (4 marks)

End of Page